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Tight Stocks Put Soybeans Back in the Spotlight

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PERSPECTIVES

THIS YEAR'S DROUGHT, as of mid-July, was among the most severe and widespread of this century, but not the worst. Meteorologists say, however, that the dry, hot conditions of 1988 might yet rewrite more of the bad-weather record book, depending on the weather pattern during the rest of the summer.

During the week ending July 9, according to USDA meteorologists, 43% of the nation was experiencing "severe to extreme" drought. This is the fourth highest July total during the 93 years that records have been kept. At the top of the list are 61% in 1934, 45% in 1954, and 44% in 1936. April-June 1988 precipitation was the lowest this century in 17% of the nation's climatic divisions. In the Midwest, more than 90% of the divisions received no more than 60% of normal rainfall and 37% received no more than 40%.

Crops in many areas had been severely damaged by the hot, dry weather. As of July 17, 50% of the corn crop was rated poor or very poor, 32% fair, 16% good, and only 2% excellent, in the top 17 corn states. The Indiana crop was 89% poor or very poor, Illinois 65%, Minnesota 60%, and Iowa 45%. These are 4 of the top 5 corn-producing states.

Soybeans were rated 30% poor or very poor, 50% fair, 18% good, and 2% excellent as of July 17 in the top 19 states. The spring wheat crop was 73% poor or very poor in the top 5 states.

Another way of measuring crop conditions is a 1-5 scale (with 1 very poor, 2 poor, 3 fair, 4 good, and 5 excellent), developed by economist Allen Johnson of USDA's Economic Research Service. This measure shows overall ratings July 17 of 2.5 for corn (compared with 4.2 a year ago), 2.9 for soybeans (compared with 4.0 a year ago), 2.0 for spring wheat (compared with 3.6 a year ago), and 3.3 for grain sorghum (compared with 4.2 a year ago).

Do these measurements and statistics mean we're in for another Dust Bowl or farm recession? Not likely, economists say, because the situation is different now in several ways. Soil conservation practices are more widely used. Three times as much cropland is now irrigated. Government programs are better able to manage production, supplies, and disaster relief. Grain storage capacity has greatly increased, and stocks of many crops remain large. Farmers are now much more productive, raising five times as much corn and three times as much wheat per acre, so it would be easier to bounce back from a short-term decrease in production. Many fewer people are farming now, so the adverse effects of a bad crop year touch a smaller part of the population directly.

This severe drought is occurring in a decade that has been marked by increased weather extremes. Though weathermen can't say what's "normal," the volatility of the 1980's may be more the norm than the unusually stable weather of the 1950's through the early 1970's, says Norton Strommen, USDA's chief meteorologist.

The country has been experiencing higher temperature highs and lower lows, more droughts, and more floods in the 1980's, Strommen says. Precipitation and temperature are the two main factors in the success or failure of crops, so the volatility of the weather has made recent years an especially uncertain time for many U.S. farmers.

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FEATURES

Tight Stocks Put Soybeans in Spotlight *by Jack Harrison* 4

Soybean growers, processors, and traders have had some added excitement, plus additional worries and risk, because tight stocks, and then dry weather, have pushed up prices and brought added attention to their crop. Stronger domestic demand has also been a factor in the drawdown of soybean stocks. U.S. growers are trying to avoid further losses of market share to South American producers.

Cost Control Is One Legacy of Farm Crisis *by Gregory Hanson* 7

U.S. farmers reacted to the financial crisis of the mid-1980's by cutting production costs and making other important adjustments. This year's drought is causing more difficult times for many producers. But an analysis by ERS economist Gregory Hanson indicates that lessons learned from the earlier crisis can be helpful now and in the future.

U.S. Sugar Industry Remains Heavily Protected *by Judith Foulke* 10

Sugar is not a major crop in this country, but it is one of the most heavily protected by price supports and import quotas. The government sugar program continues to be widely debated. Sugar growers, as well as the corn industry, are among the beneficiaries. The repercussions of the program extend to many parts of the world.

Newly Industrializing Countries Reshape World Economy *by Eric Van Chantfort* 12

Newly industrializing countries, such as South Korea and Taiwan, are having an increasing impact on the world economy, through trade, investment, and capital flows. And they are an important part of the U.S. farm export picture. But how do countries qualify for that label, and why is the United States moving four NIC's into the category of industrialized nations?

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Tight Stocks Put Soybeans in Spotlight

The soybean futures market has been up to its old tricks—volatility, excitement, and surprise. In past years, soybean trading acquired a reputation for lots of action and unexpected movements, keeping producers, traders, and users on their toes.

In recent years, however, the market has been relatively subdued. In fact, U.S. growers have struggled through a disappointing period of increased foreign competition, cutbacks in domestic production, and lower prices. But in 1988, even before the weather was making headlines, the prospect of falling soybean stocks led to higher prices and a new dose of the old-time excitement in the market.

"For the first time in 8 years, we've had people from the bond market calling us up to see what the soybean prices are," a Chicago commodities broker commented in June.

The hot, dry weather this spring led to cash and futures prices of soybeans pushing above $10 a bushel in June. A year earlier, cash prices had been only about half that much. In recent months, of course, there also have been increases in the prices of wheat, corn, and other basic commodities, but the soybean market has been one of the liveliest.

So why all this action? Analyst Roger Hoskin of USDA's Economic Research Service cites several reasons, including possible drought damage to the 1988 crop, transportation problems because of the low level of the Mississippi River, and strong domestic demand, particularly for soybean meal—all at a time when stocks were already falling.

In mid-July, USDA forecasters projected U.S. carryover stocks of soybeans at 290 million bushels on August 31, the end of the marketing year. This would be the lowest end-of-year supply since 1983.

Use Rises While Output Drops

This has been a good year for exports of U.S. oilseeds, despite record world oilseed production and a significant increase in South American soybean production. Soybean exports for 1987/88 are expected to be up 4 percent, to 785 million bushels, the largest volume since 1982/83.

"As far as stocks are concerned, the U.S. government is out of the soybean business."

The hottest domestic demand area recently has been soybean meal, which is used to feed animals, mostly hogs and poultry. "The chicken-eating binge the nation has been on requires a lot of soybean meal," Hoskin says.

Sales of U.S. soybean oil are running well ahead of last year, with exports for the 1987/88 marketing year expected to total 1 million tons, the most since 1979/80. The Export Enhancement Program and other forms of export assistance have boosted soybean oil exports.

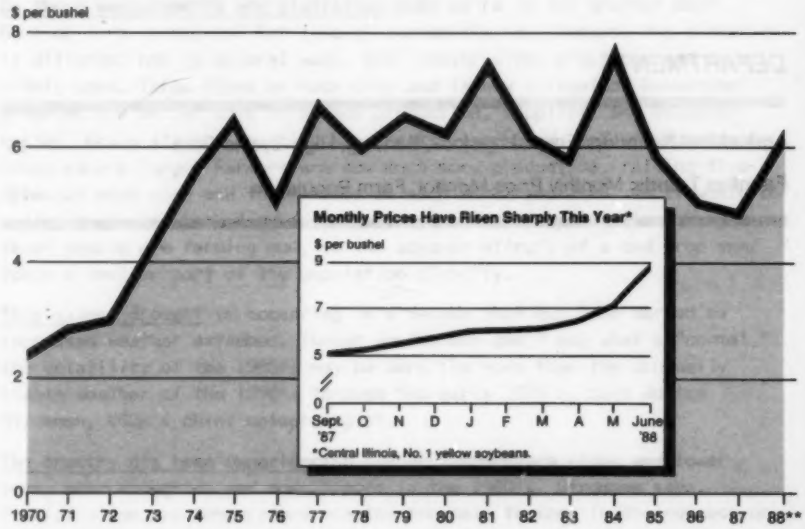
Oil stocks are still substantial. Crushing of soybeans yields 80 percent meal and 20 percent oil, and meal has been the big demand item.

In contrast to beans and oil, soybean meal exports have been down by about 10 percent this year. Slowed Soviet buying and stable demand in Europe have cut sales of U.S. soybean meal. Another factor has been a big oilseed crop in the European Community.

In this country, soybean use has risen for 3 straight years and production has declined the last 2 years. World inventories have been falling for several years. Early indications suggest, however, that U.S. planted acreage is up only slightly this year, because a number of factors make sudden changes in cropping plans difficult.

The attractiveness of the government corn program and the existence of acreage bases in the Corn Belt make it difficult for farmers to give up a certain return on corn

Annual U.S. Average Soybean Prices Have Ranged From $2.35 to $7.81 per Bushel During the 1970's and 1980's*



*Marketing years ending August 31.
**1988 estimated as of July 12.

in exchange for an uncertain return on soybeans, Hoskin says. Analysts also note that the government wheat and feed grains programs have additional acreage locked up, leaving little flexibility for many producers.

"As far as stocks are concerned, the U.S. government is out of the soybean business," Hoskin says. The government held 370 million bushels of soybeans at the end of April 1987 but only 13 million bushels a year later.

U.S. Still World Leader

The United States is the world's leading producer and exporter of soybeans but has lost some of that edge in recent years. The record U.S. production year was 1979, with 2.26 billion bushels grown. Production has averaged 1.93 billion bushels per year during the 1980's and was 1.51 billion bushels per year in the 1970's. The U.S. soybean crop was valued at $10.8 billion in 1985, the year of the record high yield of 34.1 bushels per acre.

The record for soybean area was established in 1979, with 71.4 million planted acres. U.S. acreage was below 20 million until 1955, first hit 30 million in 1964, 40 million 3 years later, and 50 million in 1973. It has averaged about 65 million acres during the 1980's. The 3 lowest years of the last 10 were 1985, 1986, and 1987.

World soybean production rose fivefold in the last 30 years. Brazil and Argentina have rapidly expanded their production since 1970. Between 1980 and 1987, South American acreage increased nearly 40 percent to 38.4 million acres, and production rose more than 46 percent to 28.2 million metric tons (1.04 billion bushels). Brazil's crop this year was nearly 700 million bushels, slightly above the record set in 1986 but below what had been expected until weather problems developed. Argentina's 1988 production was a record 330 million bushels.

The U.S. share of world soybean production fell from 74 percent in 1967/69 to 56 percent in 1984/86. During the last 5 years, world demand for protein meal and vegetable oil has been increasing at average annual rates of 3.4 percent and 4 percent, respectively.

The U.S. domination of the world soybean market has eroded because of South American competition, more foreign production of tree oils (such as palm oil), and greater oilseed production in Europe.

Prices Volatile in 1970's

Prices of soybeans increased moderately during the 1960's, then jumped sharply in the 1970's because of crop failures abroad and increasing world demand for protein feeds. There have been marked price variations in the 1970's and 1980's. The largest change occurred in the 1972/73 marketing year, when prices rose from $3.13 a bushel in October 1972 to a record high monthly average of $10 a bushel in June 1973. The next month, however, President Nixon imposed an embargo on soybean exports, and the price fell to $6.69.

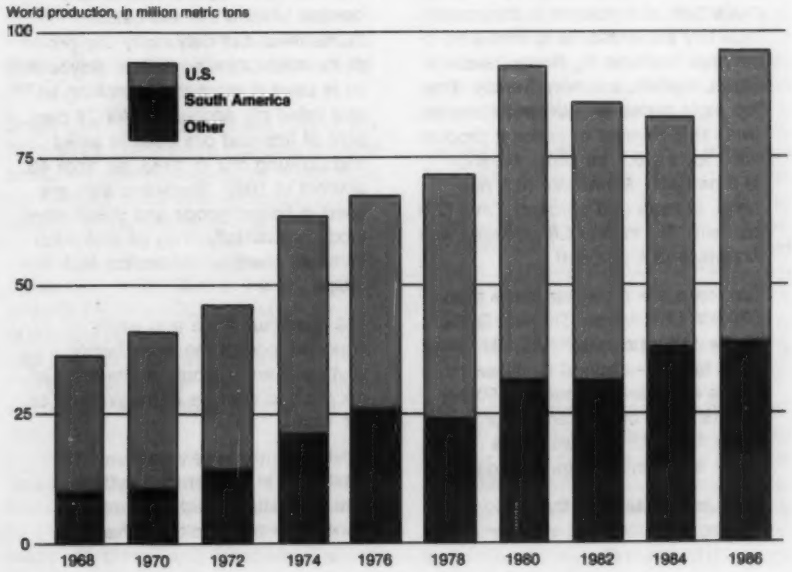
Analysts say that soybean prices usually affect prices of other basic farm commodities, as well as some nonfarm commodities, because higher prices can encourage food processors to stockpile supplies. For that reason, there has been some concern about the threat of inflation as soybean prices rose this year.

A boom in grains and oilseeds during the 1970's followed large purchases by the Soviet Union, China, and India. Drought cut the U.S. crop in 1974 and 1976. And there was the embargo in 1973. Brazil and Argentina got footholds in the world soybean market in the mid-1970's as demand for soybean meal grew rapidly.

Government price support programs for soybeans have been available every year since 1941, except for 1975. However, the season average price has exceeded the price support level most years.

The 1985 farm bill was intended to restore the eroded U.S. share of world agricultural trade by taking down the price umbrella that had protected foreign producers. But one result was that the historical relationship between grain and soybean prices has

South America Has Been the Major Growth Area for Soybean Production During the 1980's



been distorted. For South American producers, there is more money in soybeans than corn.

In this country, the 1985 farm bill has not encouraged soybean production. As the South Americans have been increasing their soybean production, American growers have been decreasing theirs.

Until this year, the 1980's had not been an outstanding decade for the U.S. soybean industry. And the outlook is uncertain. World demand for protein meals and vegetable oils is not increasing fast enough to accommodate more growth in South American production without further displacing production from the United States. □

[*Based primarily on information provided by Roger Hoskin, James Schaub, and other economists of the Commodity Economics Division, Economic Research Service.*]

'Miracle Crop' Still Growing in Importance

Soybeans have been called the "miracle crop" because they can be grown in many parts of the world, are versatile and very nutritious, and are easy to store and transport.

An ancient crop in China and other Asian countries, soybeans have been used in that region for 5,000 years as a food and a component of medicines.

They were introduced to this country in the early 1800's, but had little economic importance for the next century, being used mainly for hay. Not until 1922 was a commercially successful method of crushing the beans into meal and oil developed.

The buff-colored, pea-size beans are now second on the list of U.S. crops by value, with receipts of $9 billion to $10 billion annually in recent years. U.S. production increased sevenfold in 30 years, from 300 million bushels in 1950 to 2.26 billion in 1979.

The Corn Belt is the primary area for production of soybeans in this country. They are grown in all states in the area bounded by North Dakota, Texas, Florida, and New Jersey. The top eight states in 1986 were Illinois (with 18.3 percent of national production), Iowa (18.1 percent), Missouri (8.8 percent), Minnesota (8.5 percent), Indiana (8.0 percent), Ohio (7.5 percent), Nebraska (4.8 percent), and Arkansas (3.4 percent).

Soybeans are grown on more than 500,000 U.S. farms. The last Census of Agriculture counted 129,607 "soybean farms"—defined as those where soybeans account for 50 percent or more of total agricultural sales. Only 3.5 percent of the nation's soybean acreage is irrigated.

The United States is the world's leading producer and exporter of soybeans, but has lost some of that edge in the last few years, now producing just a little more than half of the world's soybeans.

Soybeans have been one of world agriculture's fastest-growing sectors, as world production increased 500 percent in about three decades.

A number of other oilseeds provide competition for soybeans, however. Though not as rich in protein as soybeans, these competing crops are generally less expensive and usually in ample supply. They include cottonseed, rapeseed, sunflower seeds, and peanuts. Other oils that compete with soybean oil include corn oil, palm oil, copra oil, and linseed oil.

In many parts of the world, oilseed crops are the most valuable farm commodities produced. Soybeans make up nearly 50 percent of total world oilseed production.

Soybeans also have been called an invisible commodity because consumers seldom see the beans themselves, but frequently use products made from soybeans. Soybean oil is used in margarine, cooking oil, and salad oil, accounting for 78 percent of fats and oils used in salad and cooking oils in 1986, up from 46 percent in 1960. Soybeans also are used in baked goods and many other foods. Industrially, they go into such items as plastics, cosmetics, and drugs.

The most nutritious and easily digested food of the bean family, soybeans are a staple in the diets of people and animals in many parts of the world.

Soybeans are widely consumed in East Asia in two forms: soybean milk, a whitish liquid, and tofu, a curd resembling cottage cheese.

Soybean sprouts are used in salads and as a vegetable. Soy sauce, a salty brown liquid fermented from soybeans and wheat, is much used in cooking in the Orient, and to a certain extent in other parts of the world.

Soybean meal is roughly 44 percent protein, compared to 9 percent for corn. But livestock producers, in considering substitute feed ingredients, have other factors to consider besides price. Less protein may slow the growth of livestock, which could increase the total cost of production. Also, an increase in the price of soybean meal tends to boost the price of competing feeds.

About 55 percent of the U.S. soybean crop is usually crushed domestically and the rest exported as beans. The seed contains 17 percent oil and 63 percent meal. Poultry consume 45 percent and hogs 30 percent of the soybean meal fed in this country. Soybean meal accounted for 57 percent of protein fed to U.S. livestock in 1966 and had increased to 75 percent in 1985.

Soybeans may be cultivated in most types of soil, but thrive in warm, fertile, well-drained sandy loam. Maturing during September and October, they are usually harvested by combine in this country after the leaves have fallen off the plant and moisture content of the seed has dropped to 13 percent, permitting safe storage.

Soybeans can be planted as late as mid-July in many regions of the United States. Wheat farmers can double-crop with soybeans after harvesting their wheat. And corn farmers can put in beans if they fail to get their full acreage of corn in the ground on time.

Cost Control Is One Legacy of Farm Crisis

After adding up the data on the performance of the farm sector during 1987, economists say the evidence continued to suggest that U.S. agriculture had moved from a period of financial stress into one of gradual recovery. As this article was prepared, it was still too early to determine how this year's weather problems might affect farm businesses. However, the sector as a whole may be somewhat less financially vulnerable than it was a few years ago when production costs and debts were substantially higher.

Economist Gregory Hanson of the Economic Research Service has been examining the adjustments that have occurred in the farm sector during the 1980's. Here are some of his observations on those adjustments and how they may affect U.S. agriculture's ability to face the challenges in the months and years ahead.

American farmers have cut their production costs. Controlling costs may be an important lesson from the agricultural crisis of the mid-1980's.

Not all of them have succeeded, but farmers, generally, were able to "tighten the belts" of their farming operations and adjust to changing conditions. The total costs of producing U.S. farm commodities fell from a peak of nearly $143 billion in 1984 to $122-$123 billion in 1986 and 1987, a drop of about $20 billion.

Lower fuel and fertilizer prices and slightly lower interest rates reduced farmers' expenses $4 billion in 1987 compared to 1984. Lower feed prices saved livestock producers nearly $5 billion in expenses. But about 55 percent of the drop in expenses was due to cutbacks in the use of farm inputs such as machinery, chemicals, and financial credit.

Most farmers have been using their machinery longer (by doing more maintenance and repairing instead of replacing), carefully monitoring the use of variable inputs (such as fertilizer and pesticides), and tightly controlling labor costs. A large number of farmers also have sought relief from creditors. These are some of the same measures that other industries typically take when faced by financial crisis. Like the steel and auto industries earlier, U.S. agriculture has been struggling through a period of contraction, becoming leaner and more cost-efficient.

As for farm equipment purchases, there has been a recent surge in buying. But most farmers are being very careful about such spending. Projected capital purchases of $9-$11 billion in 1988 are only about half the $20 billion level of such purchases in 1979, the record year.

During the 1980's, for the first time since the 1930's, U.S. agriculture had two crises at once.

We know that many U.S. farmers are doing a better job of management because we can see that costs have been cut and more income generated. Net cash income is projected to be about $16-$18 billion higher in 1988 compared with 1984, and only about $5 billion of that increase is due to growth in government direct payments and net CCC loans to farmers.

Some farm operations did not survive the hard times. There was a shakeout of those producers who were unable or did not have the flexibility to adjust their finances quickly enough to the changing conditions.

Farm debt was reduced by more than $50 billion, from $193 billion at the end of 1983 to $142 billion in 1987. About 25 percent of this decrease was written off by lenders, and the rest was paid down by farmers. The debt-to-asset ratio for U.S. agriculture was 23 percent in 1985 but has fallen to about 19 percent.

Spending Cautiously

Even with profits improving, as indicated by last year's record net farm income, many farmers and ranchers spent cautiously. The rebound in hogs and cattle was particularly strong in 1987, but those producers do not appear to be overextending themselves, in purchases or borrowing.

For example, the percent of agricultural banks in the Chicago Federal Reserve District (which includes the heart of the Corn Belt) whose officers believe their loan-to-deposit rate is too high has fallen from nearly 60 percent in early 1979 to only 4 percent in early 1988. Farmers have cut back their borrowing because the memory of the mid-1980's debt crisis is fresh in their minds.

This also can be seen in the reluctance of producers to expand too rapidly. A significant expansion in livestock had been expected for some time, and it's somewhat of a mystery why it had not occurred by early 1988. Expansion of output has been about half the expected rate.

Usually an increase of 10 to 15 percent in hog prices leads to an increase in hog production the next year of 10 percent or greater. But 1987 output rose only 5 percent following a price gain of 14 percent in 1986. And feed costs were at their lowest level in nearly 14 years. Many producers are apparently content with slow, steady growth. They don't want to take too many chances.

U.S. farm production costs are now such that we can better compete with farmers in other parts of the world, such as the European Community. In the early 1980's, with high land costs, rapidly expanding inventories of increasingly costly machinery, and credit bills of more than $20 billion an-

nually, U.S. agriculture was in a condition of high-cost production. We're now narrowing the gap between actual cost and "least-cost" production that is emphasized in economic textbooks.

Federal farm policy has had an important role in the recovery. The 1985 farm bill has influenced the supply-demand situation. World supplies of most major commodities are tightening. The farm bill provided lower loan rates, better reflecting world market conditions. The Export Enhancement Program and other marketing tools have helped to get U.S surpluses into the marketplace. Soybean and wheat stocks are expected to be the lowest in a number of years. Farm program payments rose to record levels during 1985-87, but will be lower this year.

Two Crises at Once

During the 1980's, for the first time since the 1930's, U.S. agriculture has had two crises at once—an income crisis and a debt crisis. Real net farm income during 1980-83 averaged $21 billion annually, in 1982 dollars. This was 37 percent less than during the preceding 4-year period. The decrease in income was partly due to macroeconomic conditions, including the strong dollar, which priced our farm exports out of some markets, and to higher interest rates.

The next 3 years, 1984-86, can be considered a time of debt crisis, since about $11 billion in farm debt is estimated to have been written off by lenders. At the same time, real estate values, which provided the bulk of security for farm loans, fell $230 billion. The 12 Midwestern states comprising the Corn Belt, Lake and Northern Plains regions lost $120 billion in land equity during 1984-85 alone. This decrease in equity undercut the collateral that previously had given producers good access to credit from banks.

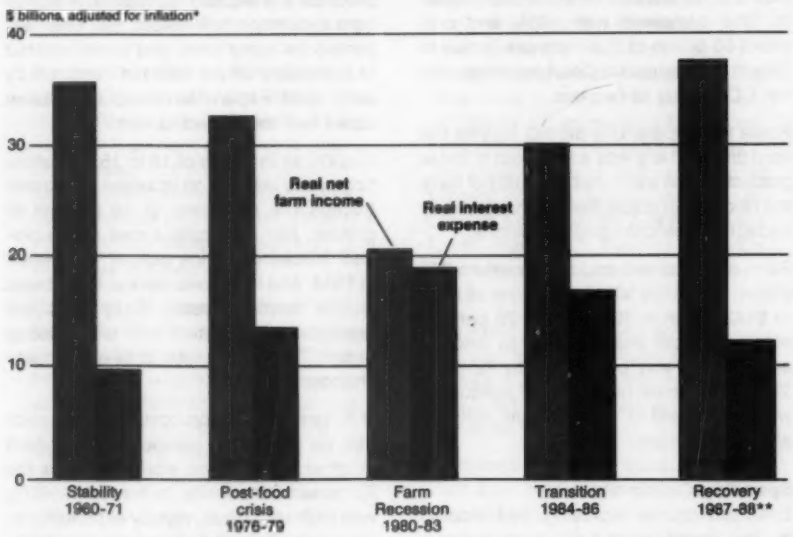
A comparison could be made between the late 1970's and the post-World War I era, when a boom in exports to Europe ended. Tariffs were raised after World War I, and that added to the problems. The ultimate result was the farm crisis of the 1920's and 1930's.

In the 1950's, we had income problems but not the high level of farm debt. In the 1960's, there were continuing problems with surplus supplies, but these were not severe enough that income and land values suffered. The 1970's, however, were an extraordinary period. Many people misread the demand signals. Policymakers and farmers alike thought we were entering a long period of commodity shortages.

In the early 1980's, U.S. farmers faced a situation with similarities to the Great Depression of nearly 50 years earlier. Unfortunately, the lessons of the 1930's had been largely forgotten. And we had no idea that the dollar would explode upward, that a large segment of the world economy would experience slow growth, or that the debt crisis in developing countries would partly choke off their demand for our grain.

The contraction of U.S agriculture during the 1980's has been painful. But now this generation of farmers has learned some of the difficult financial lessons that an earlier generation learned in the Depression.

While Real Net Farm Income Has Been Increasing in Recent Years, Real Interest Expense Has Been Decreasing



*1982 constant dollars. **1987-88 projected.

Banking Has Changed, Too

New ways of doing business have been adopted by lenders as well as producers. Bankers, too, are now more cautious. Collateral lending is necessary in an agriculture that frequently experiences wide swings in prices and income. But many lenders now want to see more than collateral. They are concerned about adequate cash flow and long-range financial planning, as well.

The 1986 tax reform measures, including the elimination of capital gains deductions and the 10-percent investment tax credit, are also reducing tax-motivated incentives to expand farm investments. This may be one reason that expansion in the livestock sector has been less than expected.

Can the cost-cutting be permanent? Not everyone agrees, but I believe American

farmers will continue to have success in holding costs down. Technological improvements, another factor in efficiency, also are continuing to lower costs per bushel produced.

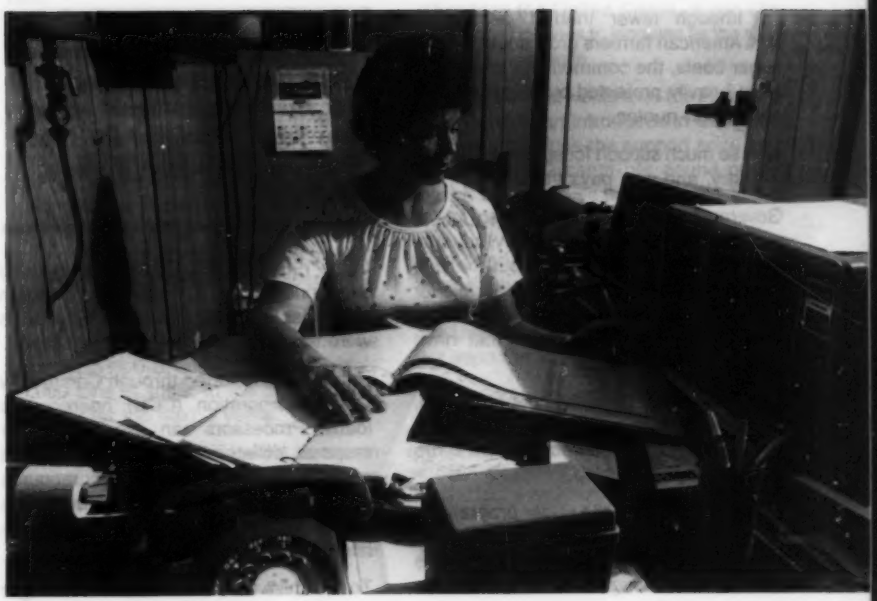
Farmers have no control over the prices of "manufactured" inputs such as pesticides, fertilizer, and fuel. If fuel prices went up considerably, it would reduce the impact of cost-cutting in agriculture. The decline in energy costs and interest rates, two factors that originate outside the farm sector, had positive effects on the farm economy in recent years. In fact, the decline of interest expenses has been as important as any factor to the recovery of farm income, because interest savings on paid-down debt can be permanent from year to year.

While real interest on farm business debt increased $13 billion from 1970 to 1982, it has fallen by nearly $10 billion since 1982.

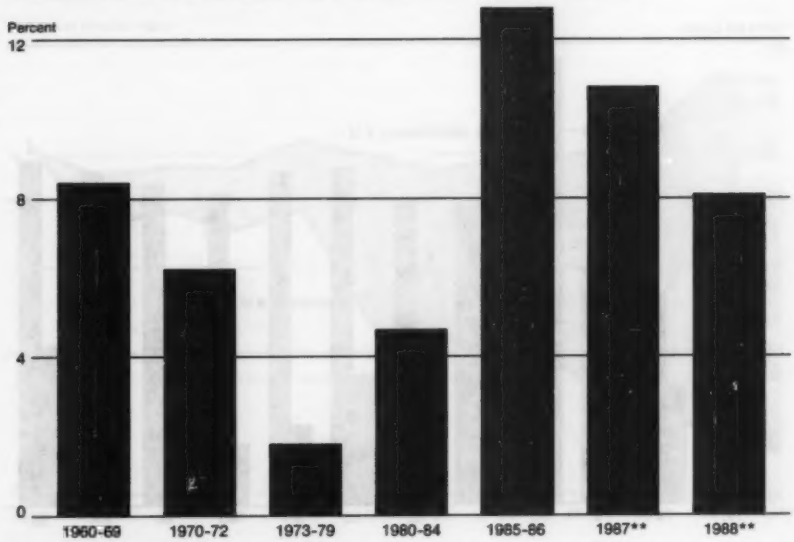
But for many farmers, debt remains a problem and the process of debt restructuring continues. (New difficulties, such as dry weather, have become a part of the situation for some farmers and could have an effect on other trends.)

In real terms, farm income and farmland values are both now about where they were in the 1960's. Since that was a stable, slow-growth era, these may be more realistic levels as U.S. farmers increasingly face competition in world commodity markets. □

[*Developed from information provided by economist Gregory Hanson of the Agriculture and Rural Economy Division, Economic Research Service.*]



After Rising to Record Levels in 1985-86, Government Farm Payments As a Percentage of Gross Cash Income Have Decreased*



*Payments include both direct payments and net CCC loans. **1987 estimated, 1988 projected.

U.S. Sugar Industry Remains Heavily Protected

Although fewer than 1 percent of American farmers grow sugarcane or sugar beets, the commodity is one of the most heavily protected by price supports and import quotas.

Why so much support for such a small U.S. industry, and who pays the bill?

Government protection is necessary for the survival of the U.S. sugar industry, say supporters of the program. Without the program, they say, it would be impossible for American growers to compete with the major sugar-exporting countries that have lower production costs.

The U.S. corn industry benefits, too, because as long as sugar prices remain high, demand for high fructose corn syrup (HFCS) stays high also.

Yet other effects of the sugar program include higher retail prices for U.S. consumers and lost sales for several U.S. allies that depend on sugar as an important export commodity.

The corn industry benefits from the sugar program because when sugar prices stay high, demand for high fructose corn syrup stays high also.

In the 1981 farm bill, Congress reinstated sugar price supports, establishing a system of regular price increases. Price supports were continued in 1985 farm legislation.

Prices are supported through Commodity Credit Corporation (CCC) nonrecourse loans. Processors can use their sugar crops as collateral to obtain loans at 18 cents a pound, raw value. Nonrecourse means that if market prices fall below the loan rate, the processors can forfeit the collateral without penalty.

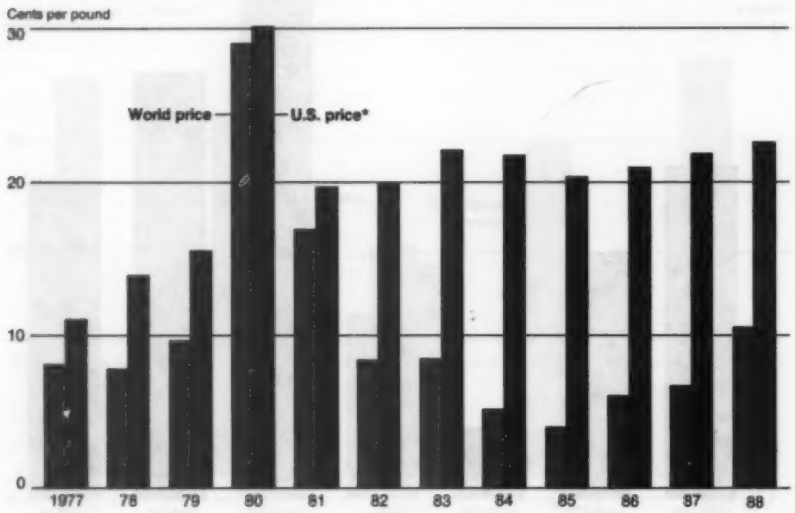
To minimize the risk of forfeiture of sugar to the government, the market price must be high enough to cover the loan principal, interest on the loan, and marketing charges. The desired price is called the Market Stabilization Price (MSP). The MSP for 1987-88 is 21.76 cents per pound.

To prevent lower priced foreign sugar from pulling down the domestic price, import quotas, specific to individual countries, have been established annually since 1982. The quotas keep the supply tight enough to maintain prices near the MSP, says economist Robert Barry of USDA's Economic Research Service.

"If the estimates of supply and demand are accurate, domestic sugar prices stay high enough to prevent loan forfeitures," he says. "A loan forfeiture presents a surplus and storage problem for the CCC." Federal law stipulates that the sugar price support program is to be operated at no cost to the government.

"Sometimes, however, the program has counterproductive effects," Barry says. For example, the higher prices that result from import quotas encourage overproduction, risking surpluses, he says.

Price Supports and Import Quotas Keep U.S. Sugar Prices Well Above World Prices



Import quotas began in 1982. Price supports were in effect during all of the above years except 1980 and 1981.
*Average annual price based on New York spot price for 1977 to May 1985, nearby No. 12 futures for June 1985-December 1985, and nearby No. 14 futures starting January 1986.

Who Benefits?

The sugar price support program is of benefit to growers and processing companies, who are guaranteed the support price.

The corn sweetener industry also benefits indirectly. "Since the early 1980's when HFCS became the dominant sweetener for soft drink manufacturers, the market for it has been well-established," says Barry.

Glucose and dextrose, also made from corn, had long held 17 percent of the caloric sweetener market. When new, enzyme-based technology made it possible to produce liquid HFCS much more cheaply than sugar, soft drink manufacturers adopted HFCS as their major caloric sweetener. U.S. consumption of corn sweeteners has increased steadily. Use in 1988 is forecast at 69.5 pounds per capita, 10 percent more than sugar consumption.

The sugar price support system (plus the corn program) has allowed HFCS to be

priced at 20 percent or more below the price of sugar, Barry says. HFCS costs substantially less to produce than sugar, and manufacturers have more than doubled their output in the last 5 years.

Two other benefactors of the U.S. sugar program are foreign manufacturers of products containing sugar and American consumers of certain imported gourmet food items, which are made from lower-priced foreign sugar. Because U.S. production has expanded under the support program, import requirements have declined, thereby adding to the world sugar export surplus and keeping the world price low, Barry says.

Government supports in other nations also tend to hold down the world price. As a result, foreign manufacturers of sugar-containing products have an advantage over U.S. manufacturers in being able to buy sugar more cheaply, and therefore in being able to price their products lower.

U.S. food wholesalers have responded by importing more sugar-containing products. The United States has set quotas to restrict imports of sugar blends and mixtures, and some high-sugar-content foods, but many products are not subject to the quota. (A General Accounting Office report on problems posed by imports of sugar-containing products was recently released.)

Sugar-importing nations also benefit from the U.S. program, Barry says. By encouraging surpluses, and low world sugar prices, the U.S. and other countries' sugar support systems create a windfall for the USSR, Japan, and China, the major sugar importers.

Consumers Pay for Program

The cost of the program is basically paid by U.S. consumers, through higher prices for table sugar as well as sugar-containing products.

The sugar program also has an effect on employment, Barry says. When import quotas shrink, jobs are lost as refineries close due to less raw sugar entering the country. From 1982 to 1988, eight plants closed, eliminating more than 7,000 jobs, the economist says. Additional jobs are lost when U.S. manufacturers of sugar-containing products reduce output.

Rising HFCS production, and the jobs that the industry creates, partially offsets the loss of jobs in the sugar industry. But the HFCS industry requires much fewer workers because of its technical nature.

The highest cost of the sugar program is paid (also indirectly) by the sugar-exporting countries, says Barry. For years, the United States was the world's largest sugar importer. Imports reached a peak of 6.1 million tons in 1977 and averaged 4.2 million tons annually from 1975 to 1981. In 1987, quota imports were only about 1 million tons, 43 percent below the previous year.

What does this do to countries whose major crop and export product is sugar, particularly Central American and Caribbean countries? They are losing a major market and substantial revenue, Barry says. The higher prices they get for sugar sold to the United States does not make up for the lower volume of sales under the quota system, Barry says. And they are putting more sugar into the world market, flooding it and thereby helping keep world prices artificially low.

The Dominican Republic, in the face of a large cut in its U.S. quota, agreed to supply 50,000 tons of sugar to the Soviet Union annually for the next 3 years.

Sugar-exporting countries in the European Community, plus most other nations, also have support programs. Most major sugar producers and traders receive subsidized prices or pre-arranged premium prices for a great deal of their output, and also are protected by import quotas.

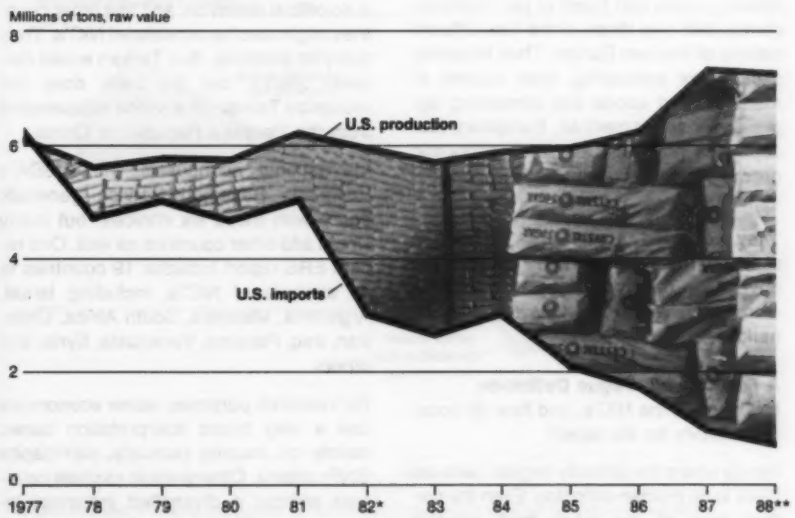
ERS analysts say that the effect of support programs in the major exporting countries is essentially the same as in the United States. The price of sugar in those countries stays high and production continues to increase. The difference, according to ERS statistics, is that in most countries other than the United States, sugar consumption continues to increase as the standard of living rises.

Several bills that would alter the sugar program have been introduced in Congress. One would reduce the support price from 18 cents to 12 cents per pound over a period of 4 crop years. Also, the import quota would be increased.

Barry says that such a reduced level of support should lower market prices, and this would probably discourage production in the United States and increase the demand for imported sugar. □

[*Based primarily on information provided by economist Robert Barry of the Commodity Economics Division, Economic Research Service.*]

Lower Import Quotas Reduce U.S. Sugar Supplies and Encourage Domestic Production



*Total of quota and nonquota sugar imports. After 1982, data are for quota imports. Before 1982, there were no quotas.
**Projected.

Newly Industrializing Countries Reshape World Economy

The global economic environment is changing as a small group of developing nations rises to the top ranks of the so-called "less developed" world.

Make room for the NIC's—the newly industrializing countries.

Their interaction with, and impact on, the rest of the world is growing steadily through trade, investment, and capital flows. The names of these countries can be found on dozens of products—often sophisticated, U.S. brand-name products—in daily use in American homes and businesses.

For the U.S. consumer, the benefits include a much wider selection of low-cost, high-tech goods, from multifunction wrist watches and telephones to television sets, VCR's, and personal computers. For the U.S. trade balance, however, the inflow of these goods represents a significant outflow of American dollars.

Although the NIC's cannot yet be compared with such industrialized powers as the United States, Japan, or West Germany, a few of them are making rapid progress in building modern, diversified, technology-based economies.

Already, some can boast of per capita incomes that rival those of the less affluent nations of Western Europe. Their industrial sectors are expanding, their exports of manufactured goods are competing aggressively with American, European, and Japanese products, and their economic growth rates are among the world's highest.

They are poised along an invisible line that seems to mark the boundary between the developing nations of the world and the more exclusive domain of the industrialized nations.

A Fashionably Vague Definition

But who are the NIC's, and how do countries qualify for the label?

Here's where the difficulty begins, because there is no precise definition. Even the correct form of the label itself remains unsettled.

Although the NIC's label is somewhat arbitrary, it's a way of focusing on a small group of rapidly developing countries with growing economic clout and an increasing influence on world trade.

References to newly industrialized countries are nearly as common—especially in the popular press—as references to newly industrializ*ing* countries. With some exceptions, the international analysts reached by *FARMLINE* prefer the latter form.

The "fuzziness" doesn't end there, because just about everyone, it seems, has a different notion of how many countries belong in this category.

In its *World Development Report 1987*, the World Bank lists five NIC's—Brazil, Hong Kong (actually a British colony, not a country), Mexico, South Korea, and Singapore. Specialists with the World Bank say there is no official definition, and that other countries might also be considered NIC's. They note, for example, that Taiwan would certainly qualify, but the bank does not recognize Taiwan as a nation independent from the People's Republic of China.

International economists with USDA's Economic Research Service generally agree with these six choices, but many would add other countries as well. One recent ERS report includes 19 countries in its analysis of NIC's, including Israel, Argentina, Malaysia, South Africa, Chile, Iran, Iraq, Panama, Venezuela, Syria, and others.

For research purposes, some economists use a very broad interpretation based mainly on income (actually, per capita GNP) criteria. Others would exclude countries without a diversified industrial infrastructure. They contend that countries like Iran, Malaysia, and Argentina do not qualify as NIC's even though the production and processing of such commodities as oil, rubber, or cattle may generate enough revenue to propel these nations into the same "upper-middle-income" category with Singapore, South Korea, and Mexico.

ERS economist Francis Urban favors a more narrow interpretation that requires, in addition to upper-middle-income status, a certain level of industrial expertise or capacity. He suggests a simple question: "Can they produce electronic gizmos? Brazil, for example, has a relatively low per capita income, but produces cars, airplanes, tanks, and electronic gizmos."

If a precise definition were needed, he says, it could be based, at least partly, on the percentage of a country's total exports or total GNP that is made up of manufactured goods, as opposed to raw or semiprocessed materials and agricultural commodities. One of the chief characteristics of many NIC's, he adds, is aggressive, export-oriented trade policies.

Describing the Transformation

His colleague, ERS economist Gary Vocke, uses the broader interpretation in his research. Both analysts agree, though, on where the NIC's seem to fit in terms of economic development.

"As economists," says Vocke, "we view development as a continuum. At one end is a heavily industrialized, heavily urban society with a very small percentage of the population in agriculture and a high percentage in the manufacturing and service sectors. At the other end is an agrarian society where the majority of people are practicing subsistence agriculture."

The term NIC, he continues, is a way of describing the transformation of a country, its economy, and its work force at a particular stage of development. The term arose several years ago when a group of developing countries started making "remarkable progress in moving away from economic dependence on agriculture," Vocke says.

(continued on page 14)

NIC's Give a Big Boost To U.S. Farm Trade

No matter how NIC's are defined, they play an increasingly important role in international trade.

Their growing economic muscle has added to the competitive pressures facing many U.S. products, contributing to the large U.S. trade deficit.

Yet, at the same time, their higher incomes, urban appetites, and multiplying demands for goods and services have opened up new export opportunities for many U.S. industries, including the farm sector.

In fact, when it comes to agricultural trade, the NIC's have been a major plus for American farmers.

An analysis by ERS economist Gary Vocke indicates that the NIC's have shifted from net exporters of grain in the 1960's to net importers in the 1970's and 1980's as "rapidly rising demand for meat and wheat products overwhelmed production." With higher incomes and continued urbanization and industrialization, their self-sufficiency in grain production has declined steadily since the mid-1960's.

Vocke reports that the NIC's (he includes 19 upper-middle-income nations in this category) now take about 45 percent of all the grain imported by the world's developing countries.

In terms of U.S. agricultural trade, some of the NIC's are now as important as such major industrialized markets as Canada and West Germany. Of the seven nations that imported at least $1 billion worth of U.S. agricultural products in fiscal 1987, three are NIC's—South Korea, Taiwan, and Mexico.

Altogether, these three, plus Hong Kong, Brazil, and Singapore, took $5.2 billion in U.S. farm products last year, or close to 20 percent of total U.S. agricultural exports. Exports to South Korea alone are expected to climb above $2 billion this year.

Of course, some trade obstacles persist.

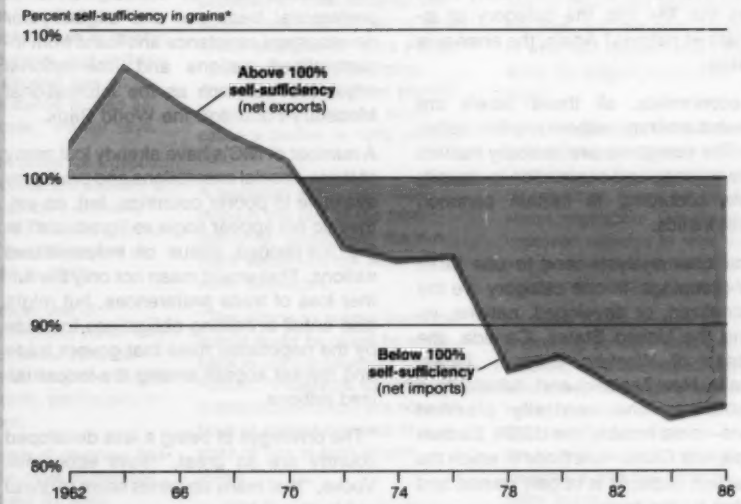
While a few NIC's (such as Hong Kong) have maintained generally open markets, or taken major steps to reduce trade barriers (Taiwan, for example), others have resisted pressures to provide access for many agricultural products.

In addition, South Korea, Taiwan, Hong Kong, and Singapore all tie their currencies to the value of the U.S. dollar, so the "cheaper dollar" has had little impact on the price of U.S. goods in these markets. A reduction in existing trade restrictions and more realistic currency valuations among several NIC's would further improve opportunities for U.S. farm exports.

With other NIC's, particularly those in Latin America, imports are being restrained by burdensome foreign debts and internal economic problems.

In general, however, the demand outlook is promising. With growing middle-income populations and, in many cases, severe limitations on land available for farming, the NIC's represent large—and expanding—customers for agricultural products.

Once Net Exporters of Grain, the Newly Industrializing Countries Are Becoming Increasingly Dependent on Imports



*Data are based on a listing that includes 19 NIC's. A rating of 90 percent would indicate that production falls 10 percentage points short of total use, with the difference made up by net imports. Total use is measured by the sum of production and net imports.

"Fuzzy as it may be, the NIC's label is useful because it identifies the single most important characteristic these countries have in common. They are more industrialized than the rest of the Third World, and industrialization is the key feature most responsible for their higher incomes."

It's a mixed group, by any measure. In 1985, per capita GNP's varied from $1,640 in Brazil and $2,080 in Mexico to $6,230 in Hong Kong and $7,420 in Singapore. The pace of economic growth also varies dramatically, from long-term (1965-85) rates averaging less than 3 percent a year to rates in excess of 6 or 7 percent.

Some NIC's are burdened with huge foreign debts, large trade deficits, and troubling economic prospects. Others show healthy trade balances and, if they're carrying any significant debt (as is South Korea), the debt payments haven't been a major problem. For the latter group—including Singapore, Hong Kong, Taiwan, and South Korea—the general prognosis is continued strong economic growth.

Crossing the Line

At what point does this growth carry them across the line into the category of industrialized nations? Again, the answer is uncertain.

For economists, all these labels are somewhat arbitrary, without any firm definitions. The categories are basically matters of convenience and convention to classify nations according to certain common characteristics.

International analysts tend to use three major groupings. In one category are the industrialized, or developed, nations, including the United States, Canada, the countries of Western Europe, Japan, Australia, New Zealand, and, debatably, a few others. The centrally planned nations—most notably, the USSR, Eastern Europe, and China—are those in which the production capacity is largely owned and directed by the state.

Finally, there are the developing, or less developed, countries.

For now, many economists continue to group even the most upwardly mobile NIC's in the third category with the vast majority of the world's nations. Overall, NIC's are viewed as still in the process of development, and many remain dependent on assistance and capital transfers from the industrialized nations.

Yet even the apparent consensus on where NIC's should be ranked has its complications. Starting on January 2, 1989, for example, the United States will officially treat four NIC's—South Korea, Taiwan, Hong Kong, and Singapore—as industrialized nations for purposes of the Generalized System of Preferences. That's the program under which the United States grants duty-free status to imports of certain products from developing countries.

The U.S. action was prompted by our growing trade deficit with these NIC's.

A Dread of Graduation

In the broader global arena, there are also implications as a country moves from a less developed toward a more developed economy. Economic progress may mean the gradual loss of various forms of preferential treatment and eligibility for development assistance and loans from industrialized nations and international organizations, such as the International Monetary Fund and the World Bank.

A number of NIC's have already lost many of these special exemptions and privileges available to poorer countries, but, as yet, they do not appear eager to "graduate" to the full-fledged status of industrialized nations. That would mean not only the further loss of trade preferences, but might also entail accepting obligations to abide by the negotiated rules that govern trade and market access among the industrialized nations.

"The privileges of being a less developed country are so great," says economist Vocke, "that many countries seem to dread graduation."

Aside from the phasing out of certain privileges, no international procedures have been established to require full graduation.

Nevertheless, some shifts of this sort are probably inevitable, and economists are pointing to a few likely candidates—at least in terms of their own analysis and research.

ERS economist Bill Coyle sees a potential inconsistency in continuing to group the Pacific Rim NIC's among the world's less developed countries. These top-ranking NIC's seem to possess the economic and trade statistics to match those of several nations that have long been considered industrialized.

"If we're going to define Portugal and Greece as developed nations, then there is probably no reason not to treat some of the NIC's in the same category," he says. "These nations are more similar in development to Japan than they are to the poorer countries of Africa, Latin America, and Asia."

The momentum of some NIC's may become virtually impossible to ignore in future classifications—especially if that momentum carries them past the major industrialized countries in certain key economic measures. And that's exactly what may happen.

Coyle points to one recent study cited in a British magazine, *The Economist*. Based on growth rates of the past 20 years, the study suggested that Singapore may have a higher per capita income than the United States by the turn of the century. □

[*Based mainly on information provided by economists Francis Urban, Gary Vocke, and Bill Coyle of the Agriculture and Trade Analysis Division, Economic Research Service.*]

AGRICULTURAL ROUNDUP

Egypt's Farm Plans Threatened by Water Shortage

Like their American counterparts, Egyptian farmers have had worries about water this year.

In Egypt, farmers are scrambling to cope with water shortages that have cut production of vital crops—and that may mean a temporary setback in Egypt's efforts to boost production and ease its reliance on U.S. food aid.

"Conditions have become serious over the last year," says economist John Parker of USDA's Economic Research Service, who tracks developments in the region. "Government planners cut off the flow of irrigation water to most farmers in February, for one month, as a conservation measure, and acreage in crops which take a lot of irrigation water is being slashed."

The shortages are largely the result of drought conditions in Ethiopia, where rainfall feeds the Nile on its northerly flow to Egypt.

"Drought in Ethiopia means trouble for Egypt," Parker says, noting that "over 75 percent of the water entering the Nile originates in Ethiopia. The Blue Nile changes from a small winter stream to a mighty roaring river in August and September following traditional rainfall in Ethiopia."

Egypt's share of this inflow is diverted by the Aswan Dam and stored in Lake Nasser in southern Egypt. A visible sign of the water shortage is the declining level of Lake Nasser, which is down to about 450 feet from 600 feet in recent years.

Last year, the tradition of plentiful rainfall was broken as the expected rainfall was reportedly about 25 percent below normal.

"Egypt's withdrawal of water from the Nile was scheduled at 55.5 billion cubic meters annually," says Parker, "but the 1987 actual supply was down about 23 percent to only 42 billion cubic meters."

The supply was also affected by the fact that Sudan is now using a larger portion of its allocation under a 1959 agreement.

And the situation may soon worsen, he says. "Unless greater than expected rainfall comes to Ethiopia in 1988, Egypt will have a more serious water shortage."

Egypt, a country with an average rainfall of 2 inches per year, is heavily dependent on irrigation water from the Nile. More than 99 percent of its crops are irrigated from the Nile. Without water, cropland would soon revert to desert, says Parker.

The crisis could not have come at a worse time, in the view of Egyptian planners looking to the future, says Parker.

"Before the water shortage hit, it appeared that Egypt was at last making a breakthrough in bolstering food production, and perhaps beginning to depend less on American assistance to feed its 52 million people," Parker says.

The aggregate index for Egyptian agricultural production showed an increase of 4 percent annually from 1985 to 1987, in contrast to gains of less than 1 percent a year from 1980 to 1982.

Moreover, greater use of technology to improve yields and the addition of about 500,000 acres of irrigated cropland helped boost productivity, particularly in wheat and corn.

Now the concern of planners has changed to the more immediate challenges posed by water shortages.

"Valuable cropland is shifting by government direction to other crops, such as cotton, which don't need a lot of water," Parker says, pointing to rice and sugar as the prime examples of crops being cut back.

The 1988 rice area, he says, will be reduced by 18 percent from 1987 and may be a third below the 1986 level. Rice accounted for about a sixth of Egypt's total water use in the 1985-87 period, about 7 billion cubic meters annually.

"Sugar will also suffer," says Parker. "The production of sugarcane and sugar beets has been pushed in recent years in efforts to limit high imports of sugar. Now, these efforts will have to be shelved. Egypt's sugar imports may double in 1988, rising from about 600,000 tons in 1987."

Wheat and corn production are also expected to be affected, although the impact may not be felt for some time to come.

"Wheat production increased 41 percent to a record 2.7 million tons in 1987, with striking gains in yields. Another bumper crop is expected in 1988 because the water crisis had not yet hit when wheat was grown," says Parker. "But problems in obtaining enough water for wheat planted in new desert projects could cause a decline in 1989 production."

A multiplier effect may ripple through the rest of the farm economy—particularly the livestock sector—in the wake of water shortages.

"The efforts to bolster livestock output could be upset by a setback in corn production," says Parker. "Prospects for increasing livestock production are now difficult to project because of a state of flux in corn import policy."

In 1987, he says, livestock production grew because feed shortages were lessened by more favorable corn import policies, allowing good gains in meat and milk output. Consequently, livestock production may drop in 1988 because of stagnating corn output, as well as a recent reduction in subsidies on imported corn that will lead to a decline in corn imports.

Corn production is usually insufficient to meet domestic needs, so Egypt enters world markets for corn every year to make up the difference. As the fastest-growth sector in Egypt's agricultural economy, livestock production depends on corn imports to meet the feed demands from the dairy, beef, and poultry industries.

Fruit and vegetable production will also be hit, handicapped at a time when it was setting records. "In 1987," Parker says, "fruit production topped 3.1 million tons for the first time, with gains reported for oranges, limes, tangerines, deciduous fruit, and mangoes."

More use of drip irrigation and other water-saving techniques may stave off the abandonment of orchards in 1988, "but orchards have been abandoned in the past, and are grim examples of what can happen when the water for irrigation runs out," he says.

Fewer vegetables will be produced this year, a stark change from last year's impressive gains for tomatoes, green beans, and winter vegetables. Greater use of improved varieties to raise yields and an increase in multiple cropping contributed to these gains.

All these developments are prompting concern among U.S. officials, who had hoped Egypt was slowly working its way out of heavy dependence on U.S. food aid, says Parker. Egypt is one of the largest recipients of such assistance and has been for many years.

The level of U.S. food assistance continues to hover at the $300 million mark per year. Egypt also has a $200 million credit line for

U.S. farm products in fiscal year 1988 under the GSM-102 program, which allows a period of 3 years in which to pay for purchased commodities. "And with the water-related problems in food production, which may only be starting, the need for U.S. aid is unlikely to be reduced anytime soon," Parker says.

Livestock Paced 1986-87 Rebound In Farm Income

Livestock have borne burdens, pulled plows, fertilized fields, and provided sustenance. According to analyst Greg Hanson of USDA's Economic Research Service, earnings from livestock production have contributed another economic benefit: They led the way in the 1986-87 rebound in farm incomes.

"It is not possible to understand the strength of the financial progress made in agriculture between 1986 and winter 1988 without focusing on livestock," the economist says. He explains that the increase in income during that time period was built on three factors: government assistance, cost cutting, and livestock profits.

It was in the livestock sector that evidence of the recovery first appeared. In addition, the gains made there were the strongest. Net cash incomes for livestock producers rose nearly 49 percent in 1986 and 1987. The stronger livestock prices helped push up farm incomes and, to some extent, helped the general farm economy.

Between 1985 and 1987, total agricultural income rose $11 billion. Nearly 80 percent of that increase went to livestock enterprises. This means that the livestock sector benefited more than the crop sector from the 1986-87 rebound in farm earnings. But, recently the crops sector has seen a strengthening in prices.

Hanson says that government supports—direct government payments plus net Commodity Credit Corporation (CCC) loans—have declined as a percentage of gross cash receipts. In 1986, government payments accounted for 13.2 percent of all farm receipts, while in 1988 they are expected to drop to about 8 percent. Hanson says 1989 could show further declines.

The cattle, hog, sheep, and poultry industries all enjoyed several years of strong prices. "For hog prices, 1986 and 1987 were the best consecutive years on record, and beef prices in 1987-88 could nearly match the previous high for consecutive years as well," Hanson says. According to ERS, 1987 prices for choice steers averaged near $65 a cwt, hogs averaged close to $52 a cwt, and broilers averaged more than 47 cents a pound.

Furthermore, until mid-1988, when signs of drought became widespread, cheap and plentiful supplies of feed benefited producers by lowering production costs. As a result, Hanson adds, farmers raising livestock were better able to invest back into agriculture. "When livestock producers bid up land, such as land suitable for producing feed grains, it helps stabilize values for crop producers without livestock," he says.

The profits associated with historically high hog-corn and beef steer-corn ratios of 30 or more during late 1986 and most of 1987 permitted many livestock producers to purchase land with larger down payments and less financing. In Iowa, which produces a quarter of all hogs and is the fifth leading producer of cattle, land prices rose 19 percent between 1987 and 1988.

"Three of every five dollars of Iowa farm receipts in 1987 were generated by livestock," the economist says.

The improvement in the livestock sector also more directly helped crops, he adds. Domestic feed demand for corn in the current crop year is up 1.1 billion bushels from 4 years ago, nearly a 30-percent increase.

Hanson says a balance between crop and livestock production has solidified over the past couple of years. Between 1986 and early 1988, U.S. agriculture was no longer as heavily weighted toward crops as it was in the mid-1970's and early 1980's.

During the 1973-82 period, crop production grew rapidly as domestic and world demand increased. But as interest rates, production costs, commodity prices, and price supports rose, export demand dropped off. Grain began to pile up in surplus.

The livestock sector's production gains during the 1970's also subsided. As red meat supplies reached new highs in the early to mid-1970's, and production costs rose, returns on cattle and hogs tumbled. Producers began to liquidate their herds. The U.S. cattle herd fell from 132 million head in 1975 to an estimated 99 million head at the beginning of this year.

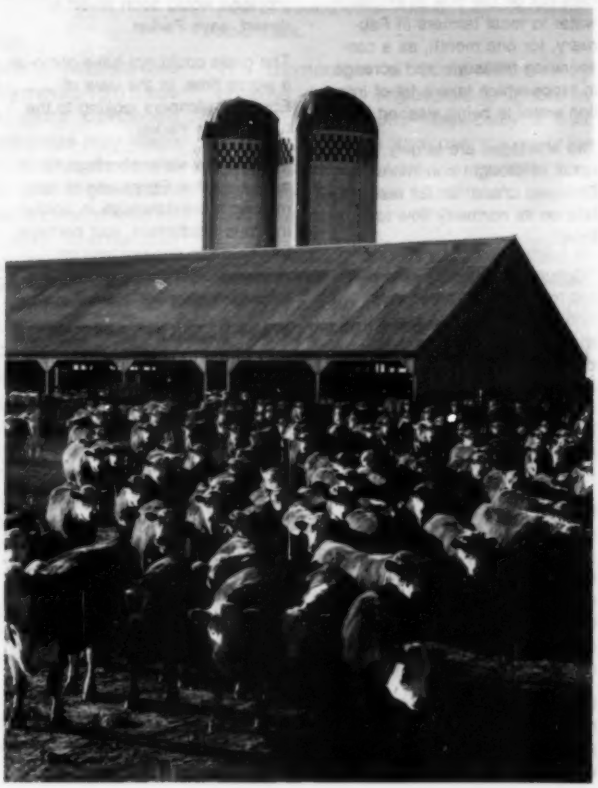
After 1985 and the passage of the Food Security Act, the industry began to see hopeful glimmers of a turnaround. Passage of the act brought legislation that appears to have aided livestock producers, Hanson says. Earlier legislation often supported feed prices above free-market levels. The 1985 legislation substantially lowered CCC crop loan rates, and put agriculture, as a whole, on a more market-oriented footing.

The legislation also allowed livestock producers to take better advantage of certain farm programs, such as payment-in-kind commodity redemption certificates, the economist says.

Now, more than half of all agricultural receipts are from livestock. "The cattle industry alone, with receipts of $34 billion or more this year, may match the 1979 record of $35 billion," he says. In 1988, red meats will probably generate $43 billion in receipts and total meats $75 billion. At the same time, total farm receipts may equal about $140 billion.

But receipts don't show the entire picture. The profitability of livestock farms grew significantly between 1985 and 1987. Net cash income rose from $19.5 billion to $28 billion. At the same time, net cash income for crop farms rose only about $2 billion to a level of $29 billion.

While this summer's dry weather has caused feed prices and other production costs to rise, the livestock industry may continue to do relatively well in the long run since its expansion has been steady and slow compared with most previous cycles, says the economist.



U.S. Farm Banks Did Better in 1987

While the total number of U.S. commercial bank failures continues at an unusually high rate, the improvements in the farm economy over the past 12 months have brightened the outlook for agricultural banks.

Agricultural banks are commercial banks with above-average concentrations of farm loans in their portfolios.

Instead of these banks being the focus of trouble in the nation's financial community, many are now seen as strong performers. According to Economic Research Service economist Greg Gajewski, several promising developments are evident among the farm banks.

At this time, it is impossible to predict to what extent, if any, this year's weather problems will alter the outlook. What is clear is that, as a group, agricultural banks are better positioned to handle any drought-related losses than they were a year or two ago.

"This spring, agricultural and rural banks were awash in deposits, and many are still aggressively seeking new customers," Gajewski says.

In 1987, for the first time in at least 3 years, farm banks saw their return on equity rise, hitting 7.6 percent. (Return on equity, a measure of bank performance, is after-tax net income as a percent of year-end equity capital.) While this was below the 13-percent return they recorded in 1982, it was well above 1987's 1.9-percent average for commercial banks as a whole.

Other performance measures showed the same trend. For example, farm bank loan losses as a share of their total loans dropped from 2.2 percent in 1986 to 1.2 percent in 1987. The percentage of nonperforming loans held by farm banks also fell, from 4 percent to 3 percent. Moreover, these banks continue adding to their already substantial "cushion" of capital to protect themselves from unexpected losses.

Gajewski adds that fewer agricultural banks are vulnerable to failure this year, barring drought-related losses. According to his early-spring calculations, which identify banks that have an above-average probability of failure, an estimated 40 to 60 farm banks could fail in 1988. That is down from the more than 75 farm bank failures in 1987.

"But if the drought continues and pushes down farmers' incomes so they can't repay their debts, we could see farm bank failures edge above the 40-60 range," Gajewski says.

Farm banks now account for 35 percent of all commercial banks vulnerable to failure, down from 41 percent in 1987, he says.

The commercial banks currently experiencing the greatest difficulty are the large, nonfarm banks in the energy belt. "Bank stress is now concentrated among banks headquartered in Texas, Oklahoma, Louisiana, Colorado, and Kansas—areas where many local economies are dependent on the oil and gas industries. Agricultural banks in these areas have not rebounded as much as farm banks elsewhere, but they still outperform their local, nonfarm counterparts," says the economist.

The last several years have taken a toll on farm lenders, he notes. The number of commercial banks specializing in farm loans has shrunk from 5,159 in 1982 to 4,480 at the beginning of 1988. "Farm bank failures accounted for, at most, one-third of the decline. The others merged with nonfarm banks or quit specializing in farm finance," he says.

High-Lysine Corn Never Caught On

In the 1960's, researchers discovered that a strain of white corn contained higher levels of the amino acids lysine and tryptophan than other white and yellow corns. The high-lysine corn, known as opaque-2, was hailed as the answer to balancing protein in corn-based hog rations.

Lysine and tryptophan are limiting nutrients in regular, yellow corn. This means that traditional corn varieties do not contain enough of these amino acids to provide the proper balance of proteins for hogs to remain healthy and to grow well.

Opaque-2 corn is also higher in the amino acids arginine, aspartic acid, and glycine. Consequently, this white-kernel corn provides a better balance of amino acids than regular corn and cuts the need for protein supplements. Without the proper protein balance, hogs will grow slowly or be stunted, they may be anemic, and their appetites and feed efficiencies may be poor. They may also have fertility problems, and their young may be stillborn or weak, says Leland Southard, an economist with USDA's Economic Research Service.

The problem with opaque-2 was that researchers had trouble raising its yields to levels comparable to other varieties. Opaque-2 corn also has additional handling, processing, and storage costs, says another ERS economist Stan Daberkow.

The corn is available, but most farmers who grow it probably feed it to their own hogs. According to Chris Turrock of Dekalb-Visor Genetics, Dekalb promotes a couple of its own corn hybrids as high-protein varieties, but not specifically as high-lysine varieties.

Carl Malone of Crow's Hybrid Corn Company in Milford, IL, says that opaque-2 yields have improved and are now only about 5 percent less than regular corn. Crow's provides opaque-2 seed to farmers, mostly hog producers and a few dairy producers.

Malone says that Crow's opaque-2 hybrids are priced about the same as its regular seed corn, but the high-lysine variety may be more expensive to handle. Opaque-2 must be grown isolated from more traditional corn varieties because any cross-pollination will result in regular kernels, he says. Furthermore, because opaque-2 has a softer kernel, it is more susceptible to mechanical damage and mold. It must be stored separately and must be ground carefully to avoid a powdery texture.

Since yields are below average and the off-color kernels are sometimes docked at the market, very little is grown commercially. This is one of the problems facing producers who grow high-lysine varieties for their own use. Because there are few, if any, commercial sources of the grain, if farmers run out, they have to substitute different feeds and balance a new ration, Malone explains.

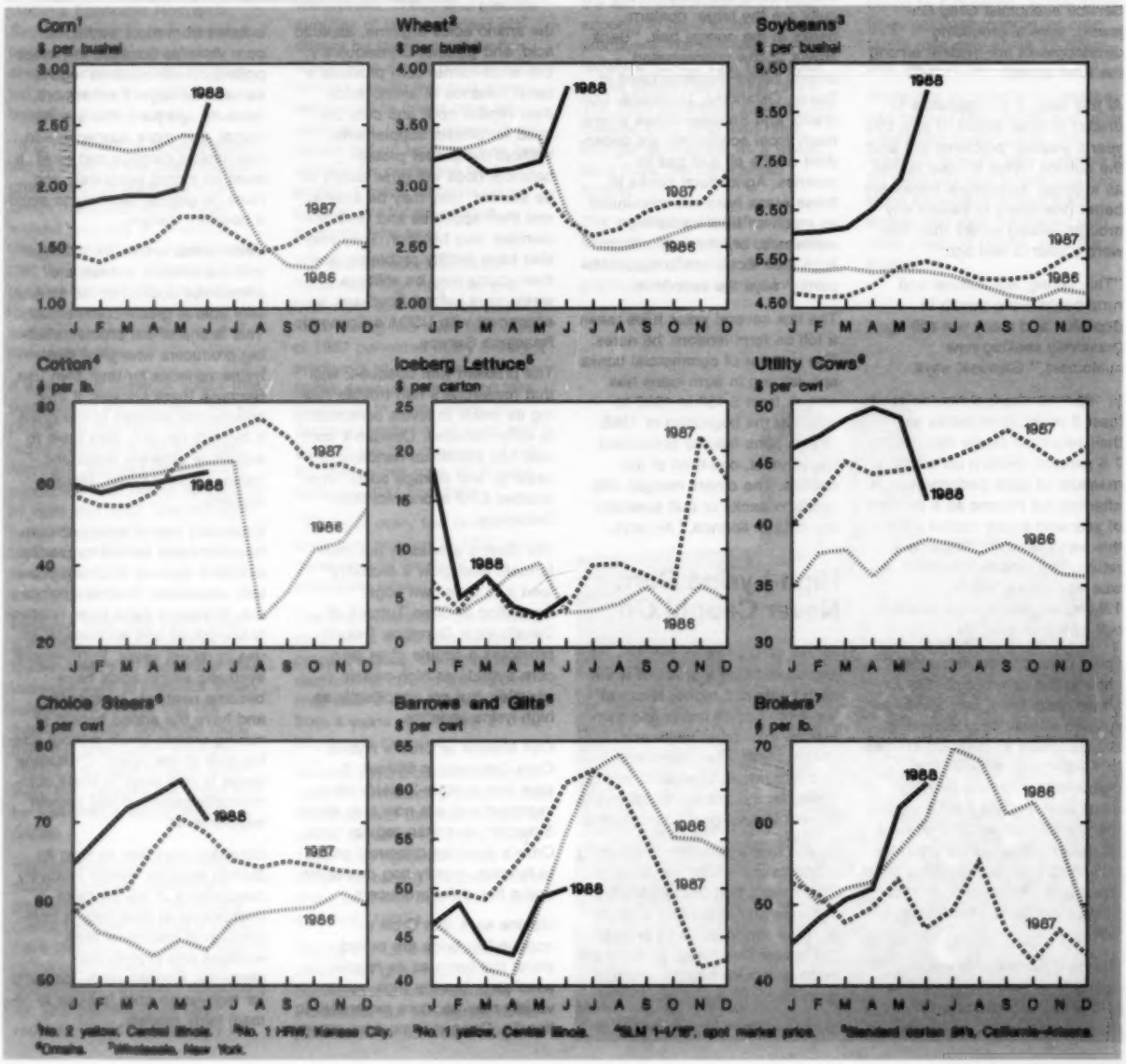
Expanded use of opaque-2 corn has also been limited by readily available sources of cheap protein, economist Southard points out. Soybeans have been relatively low-priced and economical to use in recent years. Furthermore, synthetic amino acids have become relatively inexpensive and have the added benefit of raising protein levels without adding bulk to the ration. Crystalline lysine is now used in some commercially balanced hog protein supplements.

Southard says that as long as protein sources remain relatively inexpensive, it will be more economical to feed hogs a combination of traditional corn varieties and protein supplements. Consequently, demand for high-lysine corn is likely to remain fairly modest.

FARMLINE TRENDS

Monthly Price Monitor

USDA's June 1988 index of farm prices increased 3.7% from May and was 6.9% above its year-earlier level. As markets responded to the drought, corn climbed to $2.67 per bushel, up 69¢ from May and the highest price since spring 1985. Wheat gained 60¢ reaching $3.80, the highest since November 1984. Soybeans jumped $1.80 to $8.92 per bushel—the first monthly average price above $8 since May 1984. Cotton rose another penny per lb. to 62.9¢. In the meat animals area, utility cows slumped to $42 per cwt, the lowest since January 1987, and choice steers dropped nearly $5 to $70.25. Barrows and gilts topped $49 per cwt for the first time in 8 months, and broilers reached 64.7¢ per lb., the highest since August 1986. All prices shown are monthly averages.



[1]No. 2 yellow, Central Illinois. [2]No. 1 HRW, Kansas City. [3]No. 1 yellow, Central Illinois. [4]SLM 1-1/16", spot market price. [5]Standard carton 24's, California-Arizona. [6]Omaha. [7]Wholesale, New York.

Farm Population Trends: Shrinkage, Shifts, and Fewer Heirs

Observations and data were provided by demographers Calvin Beale and Judith Kalbacher of the Agriculture and Rural Economy Division, Economic Research Service.

The number of people living on farms, estimated at about 5 million in 1987, is at its lowest level since the early 1800's. The U.S. farm population reached a peak of around 32 million early in this century and then began to shrink—at first slowly, and then more rapidly. The shrinkage continues in the 1980's. Between 1980 and 1987, the number of farm residents dropped by nearly 1.1 million, or 18 percent.

Today, Only About One American Out of Fifty Resides on a Farm

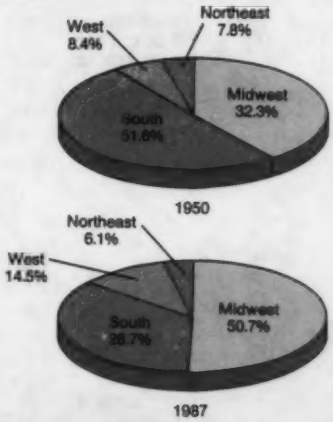
	U.S. farm population	Percent of total U.S. population
1910	32,077,000	34.9%
1920	31,974,000	30.2%
1930	30,529,000	24.9%
1940	30,547,000	23.2%
1950	23,048,000	15.3%
1960	15,635,000	8.7%
1970	9,712,000	4.8%
1980[1]	6,051,000	2.7%
1987[1]	4,986,000	2.0%

[1]Data based on current definition of farm ($1,000 or more in annual ag product sales). Under previous definition, 1980 farm population would be 7.2 million because more rural places were counted as farms.

The South has been—and continues to be—the biggest loser in farm population. In 1950, 52 percent of all U.S. farm residents lived in the South, and 32 percent in the Midwest. By 1987, the shares were reversed. Moreover, while much of the concern about the 1980's farm crisis centered on the Midwest, it was the South that recorded a 34-percent decline in farm population during 1980-87. The Midwest's farm population dropped only 7 percent in that same period.

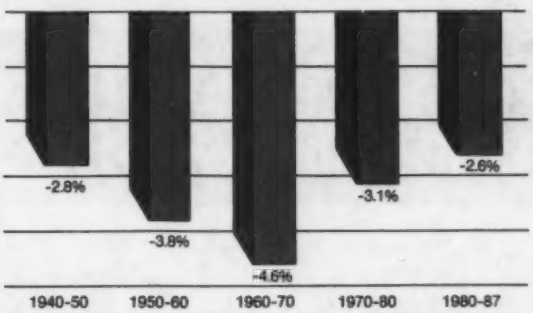
Because of Larger Farm Population Declines in the South, the Midwest Replaced the South as the Region with Half the Nation's Farm People

Percent of U.S. farm population by region:



The annual rate of decline in the farm population since 1980 has been substantial. Yet it has been lower than the rate of loss in the previous several decades, despite the farm financial crisis. Especially from 1950-70, technological change brought rapid farm consolidation and a cutback in manpower needs that caused heavy outmovement from farms. Another possible reason for lower recent losses is that so many of today's farm families depend more on off-farm than farm income and are less vulnerable to problems in the farm economy.

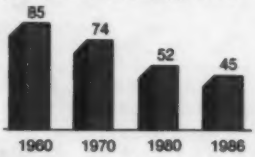
The Average Annual Decline in Farm Population During 1980-87 Was Relatively Modest Compared with Rates of the Previous Four Decades



Farm families are smaller today than they were as recently as 1960, with fewer children and potentially fewer heirs to take over the business. In the past, we have depended on the farm community to raise each new generation of farmers. (Fewer heirs, though, could mean less pressure to divide up the family farm.) Also, the median age of farmers has started to rise again after dropping from 1970 to 1984. Many younger people got started in farming in the 1970's, but some have had to quit, and fewer have entered the business in the 1980's.

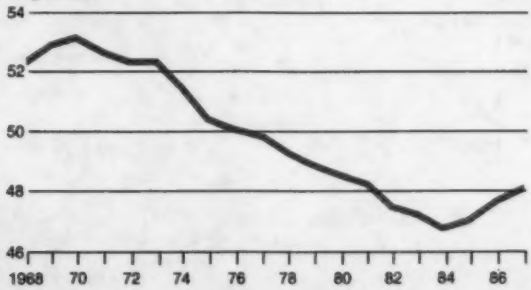
Recent Trends Indicate Movement Toward Fewer Farm Children. . .

Number of farm children (under 15 years) per 100 farm adults (age 20-54):



. . .And Somewhat Older Farmers

Median age of self-employed persons in agriculture:



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